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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,880	06/26/2003	David D. Martenson	D/A1690Q1	7841

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EXAMINER

ELLIS, SUEZU Y

ART UNIT	PAPER NUMBER
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2878

DATE MAILED: 02/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	10/608,880	MARTENSON ET AL.	
	Examiner	Art Unit	
	Suezu Ellis	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on June 26, 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement (IDS) submitted on June 26, 2003 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

The drawings are objected to because in paragraphs [0014], lines 3, 8 and 14, [0021], lines 3 and 8, reference number 55 is described as being dark areas. However, in paragraphs [0018], line 10, [0024] line 2, and [0025] pg. 8, line 7, the same reference number described is described as being light areas. Perhaps reference number 155 was intended as the light areas.

In paragraph [0023], lines 5 and 12, reference numbers 61-65 is described as being dark areas, however, there are no corresponding reference numbers in the drawings. Perhaps reference numbers 161-165 were intended. Note that reference numbers 161-165 are also described as being light areas throughout the disclosure.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-20 and 23-54 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 1 lines 10-11, claim 14 lines 11-12, claim 37 line 6-7, and claim 44 lines 5-6, in the phrase “wherein the first light areas and the second light areas are substantially uniformly spaced”, it is unclear as to whether the first set of light areas and the second sets of light areas are uniformly spaced from each other, or if all the light areas within both the first and second sets of light areas are substantially uniformly spaced. Please clarify. For examining purposes, the phrase will be treated as the first set of light areas are substantially uniformly spaced and the second sets of light areas of the substantially uniformly spaced.

With respect to claim 23 line 10, claim 34 line 2, and claim 44 lines 6-7, the term “optically different” is unclear. Does the term mean different colors (red, green, blue etc.) or affecting the amplitude of the output from the sensor? Please clarify. For examining purposes, the term will be treated as the amplitude of the output from the first set of light areas is different from that of the second set of light areas.

Claims 2-13, 15-20, 38-43 and 45-54 are indefinite due to their dependency.

It appears the limitation of claim 34 is redundant with respect to claim 23. Please clarify.

Double Patenting

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A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 21 and 22 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 24 and 25 of copending Application No. 10/608,877.

This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 21 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Loewen (US 5,017,776).

With respect to claims 21 and 22, Loewen discloses an optical encoder that includes a reflective code wheel with curved alternating light reflective (spokes) and

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dark light-absorbing areas (windows) that are substantially uniformly spaced, where the spokes are light reflective and the windows are non-reflective (col. 8, lines 8-11).

Loewen further discloses detectors that cause the output signals to be shifted by 90° and of the same shape (col. 10, lines 36-39 and col. 2, lines 12-26). Light passing through the code wheel is modulated as the code wheel rotates, and a photodetector is positioned to detect the modulated light (col. 3, lines 34-44).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11, 23-34, 36, 44-52 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (2002/0014581). Hereafter, Yamamoto et al. will be referred to as Yamamoto.

With respect to claims 1, 23, 34, and 44, Yamamoto discloses a movable scale (Fig. 28) whose optical pattern includes alternating reflective (242, 244, 246) and transparent (240) areas [0607, 0609]. As the scale (grating) moves, light passing through it is modulated (an inherent feature to an optical scale) and a photodetector (254 of Fig. 27) detects the movement of the scale [0611]. Fig. 28 illustrates a plurality of contiguously adjacent reflective (dark) areas (246) and a second dark area (242 and

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244) that are substantially uniformly spaced. Yamamoto further discloses it is well known in the art that the scales may be transmissive or reflective [0006]. Thus it would have been obvious to modify Yamamoto to change the scale to include a reflective area (240) and a plurality of transparent areas (242, 244, 246) depending on the environment of the system to be detected. Since the first set of light areas (246) are wider, more light can be reflected, thus the amplitude of the output of the sensor will be different than that of the second sets of light areas (242 and 244). Further, since the amplitude of the output from the sensor changes with the width of the light areas, the two sets of light areas are deemed to be optically different. Note the light area 246 is used as a reference position on the scale [0618].

With respect to claims 2, 24, and 45, Fig. 28 of Yamamoto illustrates the reflective, or dark, areas (240) being of substantially identical width.

With respect to claims 3-6, 25-28 and 46-47, Yamamoto fails to disclose the first set of light areas being shorter or taller than second set of light areas and the first light areas gradually changing in height. However, the dimensions of the light areas would have been an obvious design choice since a modification in dimensions of the light areas, whether in height or width, would provide the functional equivalence of changing the amplitude of the output, and thus be optically or transmissively different.

With respect to claims 7, 29, and 48, Yamamoto fails to expressly disclose that the second light areas are of substantially identical lightness. However, the scale of Fig. 28 shows two sets of light areas, one set with different lightness and the other set with uniform or identical lightness. However, if not so, it would have been obvious to make

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them of substantially identical lightness in order to reflect the light at equal intensity to the photodetector so that the photodetector can provide a more accurate detection of the movement of the scale.

With respect to claims 8-10, 30-32 and 49-51, Yamamoto fails to disclose the first set of light areas being lighter or darker or less transmissive than the second set of light areas. However it would have been an obvious design choice to modify the scale of Yamamoto in order to change the amplitude of the output by the amount of light transmitted or reflected to the photodetector.

With respect to claims 11, 33 and 52 Fig. 28 of Yamamoto illustrates the first set of light areas (246) are more transmissive than the second sets of light areas (242, 244) since the first set of light areas are wider than the second sets.

With respect to claims 13 and 54, Fig. 28 of the modified Yamamoto illustrates that that the second sets of light areas (242, 244) are on each end of the first set of light areas (246).

Claims 12, 14-20, 37-43, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (2002/0014581) in view of Loewen (US 5,017,776). Hereafter, Yamamoto et al. will be referred to as Yamamoto.

With respect to claims 12, 14, 35, 37 and 53, Yamamoto fails to expressly disclose the non-linear sides of the light areas. Loewen discloses an optical encoder with alternating curved light (window – 200, 201) and dark (spoke – 203, 204) areas in Fig. 2 (col. 6, lines 41-45) that produce spiral images. It would have been obvious for a

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person of ordinary skill in the art to modify the scale of Yamamoto to include non-linear sides of the light areas in order to produce various shapes of images depending on the design choice of the pattern. However, the applicant has not disclosed that making the sides of the light areas non-linear solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the curved sides of the light areas. Note if the light areas have curved sides, then the alternating dark areas also have curved sides.

With respect to claims 15 and 38, Fig. 28 of the modified Yamamoto illustrates the reflective, or dark, areas (240) being of substantially identical width.

With respect to claims 16 and 39, the modified Yamamoto fails to expressly disclose that the second light areas are of substantially identical lightness. However, it would have been obvious to make them of substantially identical lightness in order to reflect the light at equal intensity to the photodetector so that the photodetector can provide a more accurate detection of the movement of the scale.

With respect to claims 17-19, and 40-42, the modified Yamamoto fails to disclose the first set of light areas being lighter or darker or less transmissive than the second set of light areas. However it would have been an obvious design choice to modify the scale of Yamamoto in order to change the amplitude of the output by the amount of light transmitted or reflected to the photodetector.

With respect to claim 20 and 43, Fig. 28 of the modified Yamamoto illustrates the first set of light areas (246) are more transmissive than the second sets of light areas (242, 244) since the first set of light areas are wider than the second sets.

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With respect to claim 36, Fig. 28 of the modified Yamamoto illustrates that that the second sets of light areas (242, 244) are on each end of the first set of light areas (246).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Khan (US 5,274,229) discloses in Fig. 3, an optical encoder that includes alternating transparent windows (16) and opaque spokes (17) where the length of the windows are of gradually changing height.

Higashimatsu et al. (JP 55012403 A) discloses an encoder with a scale plate (Fig. 1) with equidistant alternating bright and dark patterns, where signal bands A are disposed on both sides of signal bands B, where signal bands B has a different pattern than A (abstract).

Matsui (US 4,948,968) discloses a plurality of contiguously adjacent first set of light areas (h) and second sets of light areas (f and j) in Fig. 15A. He further discloses the grating being non-linear (Fig. 19).

Telephone/Fax Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suez Ellis whose telephone number is 571-272-2868. The examiner can normally be reached on 8:30am-5pm (Monday-Friday).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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